Tablet computers for the dissemination of Digital Scholarly Editions

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This paper aims to communicate some of the main findings from a user study I conducted in 2014 on the potential role of tablet computers for the dissemination of digital scholarly editions. The study, which is comprised of an online survey and some interviews, forms a very early component of my research for the DiXiT Marie Curie network.[2] My research role within this network is to attempt to create an editorial model of best practices for the dissemination of digital editions of scholarly texts in manifold formats to diverse audiences. A crucial element of this methodological research will be to consider the devices and interfaces by which users access and consume the content of scholarly editions.

[2] DiXiT is an international network of high-profile institutions from the public and the private sector that are actively involved in the creation and publication of digital scholarly editions, <http://dixit.uni-koeln.de/>.

Objectives

A principal aim of the user study was to identify user needs, purposes and interactions with scholarly editions and also to gather data on their working habits and digital technology usage patterns. As someone without a background in scholarly editing I also decided to employ this user study as a means to satisfy some of my own initial curiosities about the field. Academically I trained as a historian and professionally I worked for a number of years as an editor creating digitised collections of archival materials for a commercial publisher. Consequently I included a few questions that are not specifically related to my investigation on tablets but rather to the field as a whole, but I hope those results may also be found useful to others.

Why this particular study? In an age in which many people expect to be able to digitally access relevant information on almost any device it was surprising to discover how few digital editions were responsively designed or specifically designed for tablets and/or smartphones. In several countries mobile access to the web has now surpassed desktop usage and trends suggest that this will become a global picture in the near future.[3] Surely if such devices can reach a large audience then we should consider how to employ them to disseminate knowledge from scholarly editions of texts, be that in the shape of an entire edition or just certain components of it for particular purposes.

[3] <http://gs.statcounter.com/press/mobile-internet-usage-soars-by-67-perc>.

How might a tablet-based edition fit into the workflow of a researcher and how might students and teachers use one in the classroom? To answer these kinds of questions it is absolutely crucial to try and understand the users. Claire Warwick said of humanities users that

[…] despite the popular image of the luddite humanities scholar who does not know what they need or how to use it, we have found that users have very complex models of their information needs and environment; they are thoughtful and critical about the affordances of physical and digital resources.[4]

The vast majority of digital editions which I trialled on a tablet were not responsively designed. Those that were responsive to the smaller screen size were still difficult to use from a touchscreen user's perspective. Beyond browser-based editions there appears to be very few apps specifically designed for handheld TUI (touch user interface) devices, with some notable exceptions, such as the *CantApp* edition of the *Canterbury Tales* that is under construction and also an iPad edition of the *Exeter Book* aimed at high school students. A digital edition of *The Waste Land* that was developed by a commercial publisher, TouchPress, has proven to be highly popular but would probably not be deemed to be a "scholarly edition" by the academic community. Commercially there are also some instances of print editions being adapted into interactive eBooks, for example Random House's *The annotated Pride and prejudice,* which is comprised of an annotated text integrated with an audiobook, interactive maps and timelines as well as video. Such examples are well-made and pleasant to use but scholarly editors have not really embraced these publishing formats thus far.

Kathleen Fitzpatrick in *Planned obsolescence: publishing technology and the future of the academy* pleas for scholars to open to "the possibility that new modes of publishing might enable, not just more texts, but better texts, not just an evasion of obsolescence, but a new life for scholarship".[5] The proliferation of portable handheld TUI devices marks a very significant shift in how we engage with information in many aspects of our lives. This begs the question as to whether such hardware could become a channel that would provide some form of new life for digital scholarly editions of texts. Can they provide something a little different than web browser-based editions?

Methodology

I performed the user study while on secondment at King's College London with DiXiT supervisor Elena Pierazzo and with support from an MA student, Manuela Vastolo. I also received support in the construction of the survey from another DiXiT supervisor, Mats Dahlstrom, from the University of Boras.

We wanted to reach a broad and international respondent base, so we decided on an online survey using Survey Monkey. The survey contained primarily quantitative questions but also some qualitative open text questions where we believed they would be necessary or useful. Respondents were also asked if they would like to be invited for follow-up studies, and from

[4] Warwick, C. "Studying users in digital humanities." In: *Digital humanities in practice*. Edited by Claire Warwick, Melissa Terras and Julianne Nyhan. London: Facet Publishing, 2012, p. 6.

[5] Fitzpatrick, K. *Planned obsolescence*: publishing technology and the future of the academy. New York: NYU Press, 2011, p. 14.

this pool we selected a cross-section of seven respondents for interviews that were carried out in person or over Skype. The idea of the interview was to supplement the data gathered in the survey with a more open sort of discussion. The interviews were semi-structured, and all interviewees were asked roughly the same set of questions but were given space to lead the direction of the discussion to suit their own interests. The idea was to give an opportunity for people to raise ideas or clarify things that they couldn't express in the survey, and also for us to ask some questions regarding some of the results we had seen.

One of the challenges with the study was to identify the user groups and, furthermore, once identified, how to reach those groups. Given that many editions are web-based and open source they have the potential to reach all sorts of "unexpected" users. However, for the purposes of this study we could only legitimately target "expected" users. So we gathered respondents from all those engaged in humanities subjects academically, beginning from high school students from age 16 right up to experienced scholars and university lecturers. Due to a very low response rate of only two high school students we removed this demographic from the final results. It is difficult to know if this was caused by a lack of interest in the subject matter, the length of the survey, or the bad timing (it was during school summer holidays). This is a user group I hope to revisit at some point in the future, but will probably require a different approach.

The survey was distributed through mailing lists and social media without restrictions and was conducted over a seven-week period in June and July 2014. We used one piece of logic or streaming in the survey design that created two potential pathways that allowed us to filter the respondents. They were asked if they had ever used a digital scholarly edition before as defined in the introduction. The 81% of respondents who had used such an edition were then required to answer all survey sections. The remaining 19% who answered had not used a digital edition, or were unsure if they had, were then channelled to only answer the section on digital habits and nothing specifically relating to digital scholarly editions. This was done to avoid receiving guess answers from respondents who were not familiar with editions that could reduce the validity of the data.

The matter of defining a digital scholarly edition in the survey introduction was one that initially caused me some stress, given that these definitions are often contentious and rather complex. In the end I decided to provide a very broad explanation that was primarily aimed at high school students who had probably never considered the term before:

> A scholarly edition is a publication that provides an important work of literature or historical document that has been prepared by experts in the field. These can be in print or digital forms (or a combination of the two). An example of a scholarly edition in print would be a volume of a play by Shakespeare that includes a long introduction, lots of footnotes or endnotes and variants of the text. Scholarly editions in digital form generally serve the same purpose as the print editions but can provide other features such as including digitised images of original manuscript documents, a search functionality and it can have interactive elements such as maps and videos. Digital editions have less restrictions in terms of space, so they can sometimes include a large collection of texts at which point it may be called a digital archive.

Excluding the two high school students that we removed from the results, 263 people started the survey, with 222 of them completing it. Given this completion rate of 84% and many positive comments in the feedback section, it is quite clear that there is a real interest in this subject area.

Demographics

Gender and age *(Q39, Q40)*

49% Female, 46% Male, 5% Other/Prefer not to say.
Respondents ranged from the 16-19 to the 70+ categories. 86% of those were between 20 and 50 years old and 54% were between 25 and 40.
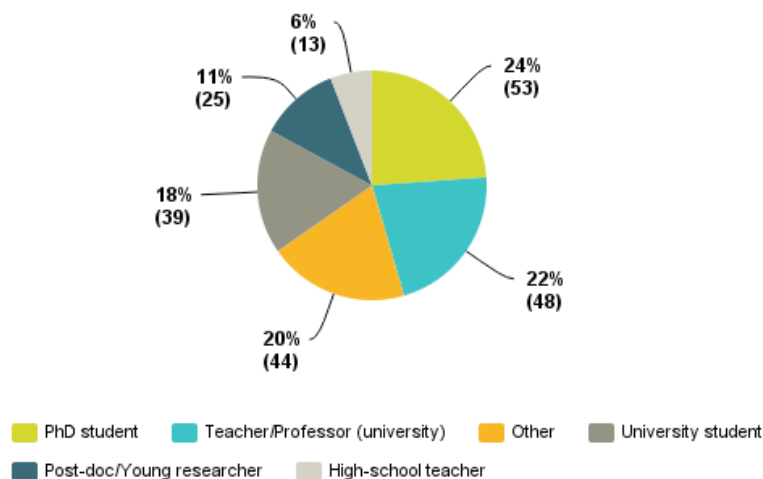
Country of residence *(Q42)*

We received a very global response from a total of 22 countries. The United Kingdom was the biggest respondent group followed by Italy, Belgium and the USA. There was also a high representation from Canada, France, Germany, Netherlands, Ireland, Norway and Spain. The remaining ones came from Sweden, Austria, Japan, Australia, New Zealand, Poland, Greece, Denmark, Portugal, Columbia and Serbia.

Occupation or position *(Q41)*

The survey respondents were from a wide distribution of backgrounds. PhD students were the largest group and high school teachers the smallest. While only 13 respondents were high school teachers, they were a diverse group and one of them was also interviewed, so the data is hopefully broadly representative. The "Other" group was comprised of many kinds of researchers, editors, librarians and technical staff.

Q41 Occupation or position

Answered: 222 Skipped: 0

- PhD student
- Teacher/Professor (university)
- Other
- University student
- Post-doc/Young researcher
- High-school teacher

Academic disciplines and familiarity with digital editions *(Q29, Q44)*

All respondents had humanities backgrounds, many of whom were involved in more than one academic discipline. Digital Humanities, Literature and History made up the big three, while there was a high representation from philology, medieval studies, classics, textual studies and information science. "English" was the most frequent language name in this list. 60% of respondents work related to the modern historical period from 1500AD to the present, 24% the medieval era and 9% worked on subjects relating to the classical periods. Within the 81% (179 respondents) who had used a digital edition before: 44% were both users and creators of editions, 29% were frequent users and 27% occasional users, which is a good distribution of experience levels.

Results

The results listed here are a selection of those that I believe produced some noteworthy results for my particular area of interest. Other areas could be explored further with the data, and to allow this I will make the raw data publicly available for anyone to make their own investigations.
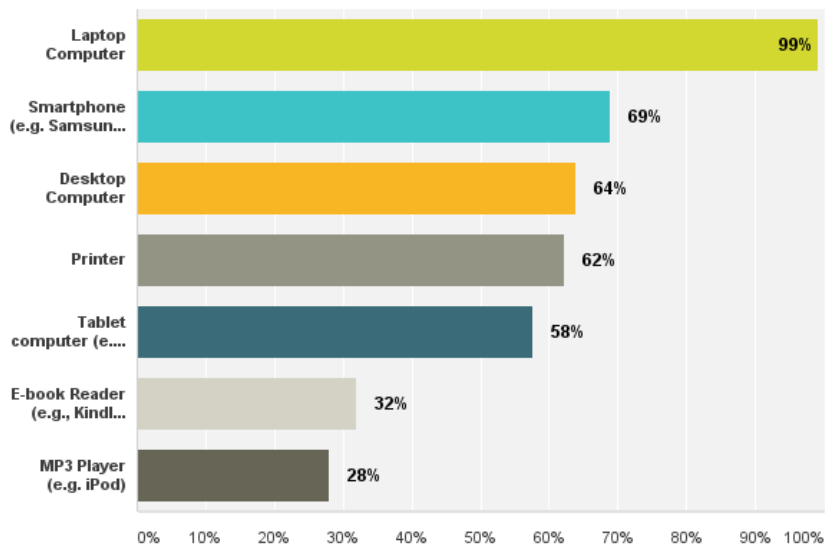
Digital habits

Electronic device usage (Q4)

Before asking any other questions on the respondents' digital working and reading habits it was important to establish which electronic devices they use for working and reading. Interestingly, laptops were almost universally used at 99%, smartphone being the next most common device with 69% using one. Tablet usage was reported among 58% of the respondents – this is perhaps a slightly higher figure than might be considered average among these types of groups, owing to the fact that tablet owners were more likely to have taken an interest in the survey. Figures for dedicated e-readers were notably lower than other reading devices on this list.

Q4 Which of the following electronic devices do you use? (Please select all that apply.)

Answered: 222   Skipped: 0

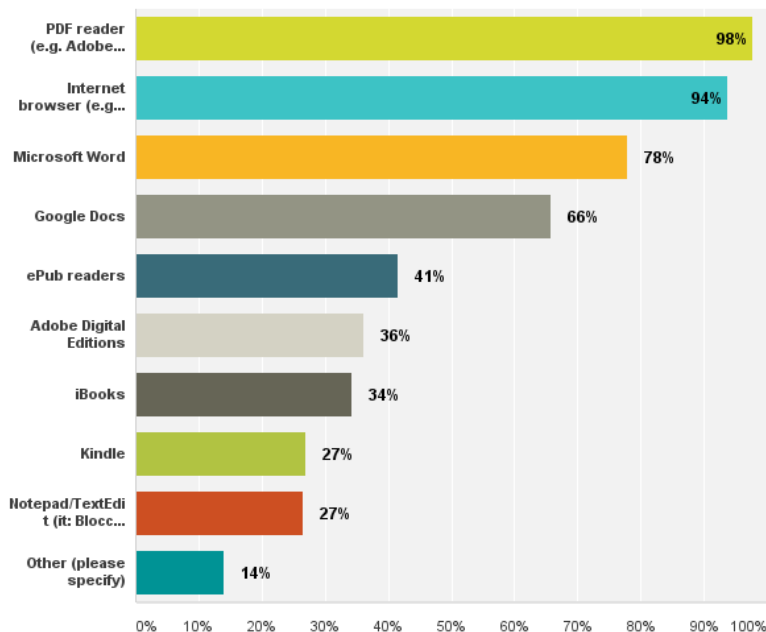| Device	Percentage
Laptop Computer	99%
Smartphone (e.g. Samsun...	69%
Desktop Computer	64%
Printer	62%
Tablet computer (e....	58%
E-book Reader (e.g., Kindl...	32%
MP3 Player (e.g. iPod)	28%

Reading software *(Q8)*

As expected, PDF reading software was almost universally used among respondents for work or study reading. Whether that is a reflection of user preferences or more an indication of the prevalence and ubiquity of the pdf-format as an output cannot really be ascertained from this result. Other types of dedicated reading software score much lower, while web browser reading and cloud-based reading in the form of Google Docs score quite high.

Q8 Which software have you used for work/study reading?

Answered: 222   Skipped: 0

| Software	Percentage
PDF reader (e.g. Adobe...	98%
Internet browser (e.g...	94%
Microsoft Word	78%
Google Docs	66%
ePub readers	41%
Adobe Digital Editions	36%
iBooks	34%
Kindle	27%
Notepad/TextEdit (it: Blocc...	27%
Other (please specify)	14%

Sources of e-books *(Q9)*

E-reader owners tend to source their e-books via cost-free distribution channels. Free e-book stores and databases were the most common with 57% of respondents using this method as well as 32% using libraries. Amazon was the most common commercial distributor with 38% reporting usage, much more than iBooks at 23% and Barnes & Noble at 9%. The relatively high percentage of Amazon users is possibly more of an indication of the popularity of the Kindle as a piece of hardware than of user willingness to pay for their e-books.

Paper versus digital *(Q10)*

Respondents were asked how often they read digitally versus reading on printed paper, and also how often they take notes digitally versus with a pen and paper. There was a negligible divide between reading digitally and on paper. However, when it comes to taking notes there was a relative preference towards pen and paper, with those saying they always use a pen 18% higher and those saying that they never or seldom use a pen scoring 15%. In retrospect, it would be interesting to check how many would be interested in using a stylus or smartpen with a tablet.
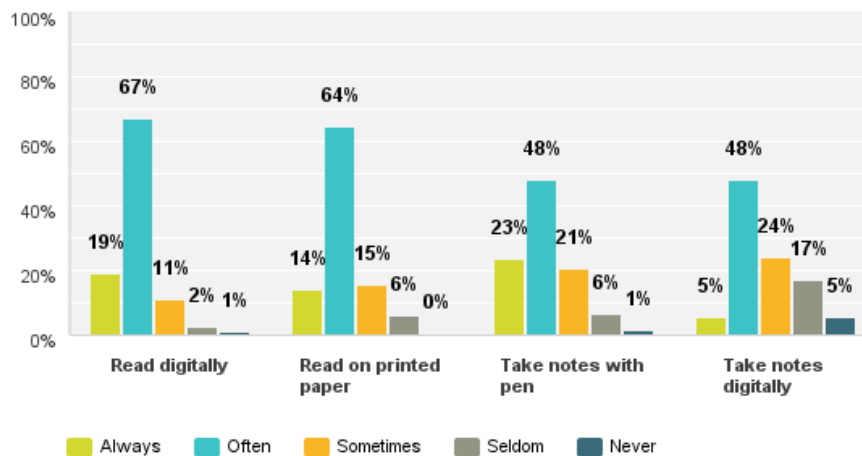
Digital note taking *(Q11)*

Among the respondents who use digital media for taking notes, the most popular was by Microsoft Word (which also featured as the third most popular reading software in question 8). Google Docs and Evernote were then the next most popular, both cloud-based services that are designed to work on almost any device.

<u>E-learning</u> *(Q12)*

To help get a sense of how and why people use online services for any kind of learning we asked very generally what websites or apps they use without steering the responses in any particular direction. The most frequently listed service was MOOC (Massive Open Online Course) provider Coursera. Online learning platform Moodle was the next most common and its rival, Blackboard, was also high in the rankings. Learning digital skills and also languages were among the most popular subjects for e-learning, with many respondents listing services such as Google Academy, CodeAcademy and Duolingo.
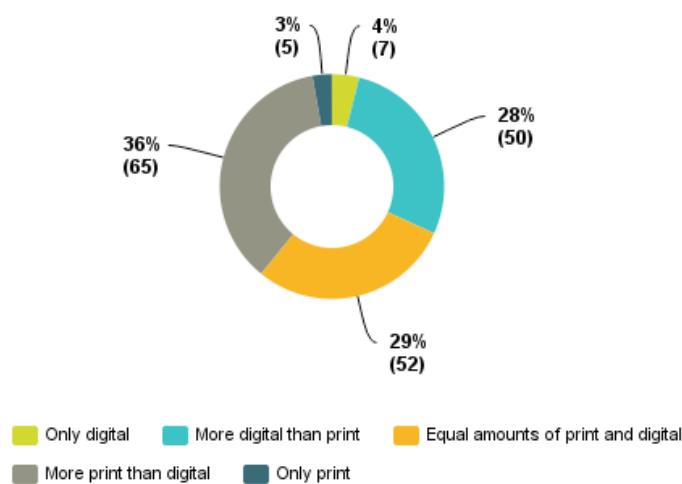
User practices with editions

<u>Print and digital</u> *(Q21)*

There was a relatively even split in usage of print and digital editions among the respondents who had used editions before, as can be seen in the chart below. 93% of respondents had used some combination of both print and digital, which perhaps reflects the persisting relevance of print as a medium and the perceived status that the digital form has now attained.

Q21 Are the editions that you use mostly print or mostly digital?

Answered: 179   Skipped: 43

- Only digital
- More digital than print
- Equal amounts of print and digital
- More print than digital
- Only print

<u>Editions and user opinions</u> (Q22, Q23, Q24, Q30)

The respondents were asked to list the digital editions that they have used. The Walt Whitman Archive was the most frequently listed edition. Other popular ones included Van Gogh Letters, Jane Austen Fiction Manuscripts, Beckett Digital Manuscript Project, Dickinson Electronic Archive and the Blake Archive. So the most common area of interest of the sample were editions of modern literary authors, with the exception of the artist Van Gogh, which may have been popular due to its recent high profile launch. 80% of the respondents believed

that it was important or very important that an edition had the status of being deemed "scholarly". Even among more casual users of digital editions a majority of 62% also took this standpoint. The avenues through which users discover editions are quite varied. Academic citation was the most frequent route of discovery and "word of mouth" was the next most common. Respondents generally believed that digital scholarly editions should primarily be aimed at those involved in the higher end of academia such as scholars, university students and researchers but considerably less for the general public and school students.

Interestingly, the most common word to appear in the list of digital editions used by the respondents was "archive", as shown in the word cloud below. There remains considerable debate in the field regarding the difference and gradients between an edition and an archive. Kenneth Price explains in his discussion of such terminology that an

> [...] archive in a digital context has come to suggest something that blends features of editing and archiving. To meld features of both — to have the care of treatment and annotation of an edition and the inclusiveness of an archive — is one of the tendencies of recent work in electronic editing.[6]

The survey introduction explained that a digital archive might be what you call a location that houses multiple editions in one place. There is certainly a spectrum of types of publication between edition and archive and perhaps this result suggests that users are not quite so concerned with reflecting on the differences as long as the publication provides utility.

[6] PRICE, K. Edition, project, database, archive, thematic research collection: what's in a name? *DHQ: Digital Humanities Quarterly,* 3 (3), 2009, p. 22. <http://www.digitalhumanities.org/dhq/vol/3/3/000053/000053.html>.

Text analysis of titles of digital editions used by respondents
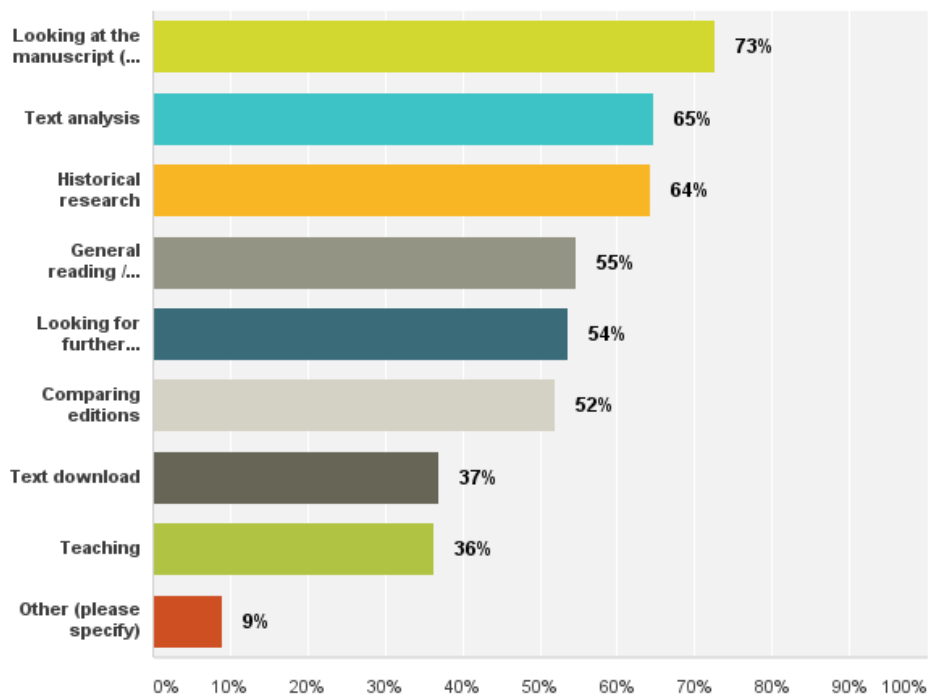
Uses and features of editions

Respondents were asked several questions to identify which features of editions they find important and useful, as well as their purposes and the tasks they perform.

Uses of editions *(Q26, Q27)*

The primary purpose of accessing digital editions was unsurprisingly for academic research at 91%, with personal browsing in second at 44% ahead of students accessing for study and assignments at 36%. The top task typically performed by this sample while using a digital scholarly edition was to look at the digitised image of the manuscript ahead of text analysis in second. Teaching was the lowest scoring option here from the full sample, but among the respondents who were teachers at universities or high schools this was actually the highest scoring usage task.

Q26 What types of tasks do you typically perform with a scholarly edition? (print, digital or both)

Answered: 179   Skipped: 43

Task	Percentage
Looking at the manuscript (...	73%
Text analysis	65%
Historical research	64%
General reading /...	55%
Looking for further...	54%
Comparing editions	52%
Text download	37%
Teaching	36%
Other (please specify)	9%

Features of editions *(Q27, Q28, Q31)*

For both print and digital editions it should be some relief to scholarly editors to know that the respondents believed that the "text" was the most important feature. Search functionality was deemed to be equally important in digital editions. In their 2012 study of interfaces for digital collections, the INKE[7] group made the assertion that despite a constantly broadening

7 Implementing New Knowledge Environments (INKE) is a Canadian research group <http://inke.ca>.

range of innovative features, "search tools still rule",[8] and from this result it appears that it is also the case for digital editions. The availability of digital images (or facsimiles) of original manuscripts was important to 75% of the sample in this question, and later on 79% said that they were an important or very important feature.

Q28: What features do you find important in a digital edition?

Answer Choices	Responses	
Text	77%	137
Search functions	77%	137
Digitised images of documents (facsimiles)	75%	135
Transcriptions	64%	115
Collation/comparison of versions	61%	110
Critical apparatus	60%	107
Bibliography	58%	104
Information on academic credibility	53%	95
Links to external sources/resources	53%	95
Visualisations	50%	89
Essays & articles (internal to the website)	49%	88
Access to XML encoding	46%	83
Translations	40%	71
Maps	35%	62
Discussion and comment features	31%	55
Contact details	26%	47
Audio	11%	20
Video	9%	16
Don't know	3%	6
Total Respondents: 179		

Tablet usage

Note: For all results in this section, non-tablet users' "not applicable" responses have not been included, and the figures have been recalculated to represent tablet users only.
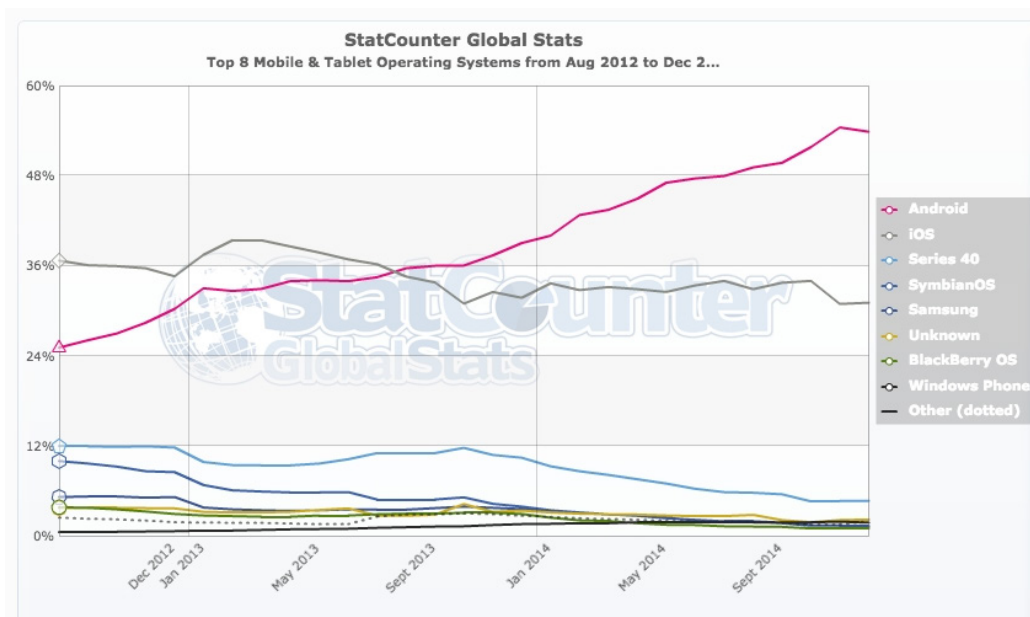
Operating systems and brands *(Q14)*

Respondents were asked to name the brand of tablet that they use. In principle, this question was more intended to establish the operating systems of their devices; as many less advanced users may not know the answer to this question, we hoped it would be easier to extrapolate that information from the brands. The top brand was the iPad with 68% of users and Samsung second most common with 11%, all other brands having significantly lower user numbers. This statistic is very close to what StatCounter provides for global tablet usage statistics, which also has iPads at 68% and Samsung slightly higher at 15%.[9] So hopefully this suggests we have acquired a reasonably fair sample of the global user base. Looking at the brands used and the app stores used, it seems that the operating system split is 68% using iOS with about 40% owning an Android and about 3% owned a Windows based tablet. It is also important to note that 35 of the users had more than one device. Trends over the last two years show a steady increase in Android users worldwide and a corresponding decrease in iOS market share.[10] Furthermore, taking Mobile and Tablet operating systems together as a single group then Android is already a dominant force with 54% of the market share and iOS holding 31%, as displayed in the chart below.[11]

[9] <http://gs.statcounter.com/#tablet-vendor-ww-monthly-201208-201412>.

[10] <http://gs.statcounter.com/#tablet-os-ww-monthly-201208-201412>.

[11] <http://gs.statcounter.com/#mobile+tablet-os-ww-monthly-201208-201412>.

Learning, teaching and gaming *(Q13, Q15, Q16)*

From the group of respondents who were tablet or e-reader users, only 35% had used them in the classroom for teaching or learning, although 74% had used tablets for some form of learning. Among the interview respondents some had ideas for teaching exercises they would like to conduct with a tablet and hand out to students to work in groups. 52% had used tablets for gaming; we asked this to see if gamification might be a worthwhile avenue for dissemination

of knowledge and engagement as play can be a useful form of learning. Among the games that respondents listed as most preferred, the top two were Candy Crush and Angry Birds, both games developed specifically for touchscreen interaction. Several more classic games also had a high representation, such as Solitaire, Chess, Tetris and a number of word play games such as Scrabble.

Apps, browsers or both *(Q17, Q18, Q33, Q36)*

We attempted to establish whether users would prefer to interact with digital editions in the form of native applications designed for specific operating systems or in the form of a responsively designed website. 90% of the tablet users had used native apps for some purpose; presumably the remaining 10% relied solely on the tablets browsers for their activities. The range of apps they used were quite diverse, with social media sites, reading apps for books or news and also several work-related apps for file storage and note-taking.

Only 30% had previously attempted to use a digital edition on a tablet. This low attempt rate may be due to a combination of their expectations that the user interface wouldn't work well and perhaps also because tablet usage currently fits better in the respondents' leisure/reading patterns than with their working/research patterns.[12] Our interview discussions indicated that this is the case, and that users sometimes have other software that they need to access while using the editions, which is only available to them on their desktop machines.

When asked which format they prefer in general, 55% preferred native apps and 45% browsers. When asked the same question specifically about digital editions, 44% remained undecided on which they would prefer; 38% preferred the idea of using editions in the tablet browser, with the remaining 18% opting for native applications. From the large percentage of undecided and a number of comments written by respondents it appears that many respondents believe that their answer would depend on the type of digital edition. Of those that had a clear preference it is interesting to see that more preferred the idea of editions as responsive websites, even though 55% of the sample preferred using apps for general purposes.

A very interesting result was that 87% of respondents would prefer for the edition on a tablet to be available offline, i.e. locally stored and accessible without a data connection. This would certainly be possible using a native application (an app developed for one specific platform) depending on data storage requirements, but it conflicts with the preference for editions as responsive sites, which, being web-based, are naturally not available offline. This issue was raised with the participants in the interviews. The desire for responsive website editions and the desire for them to be offline are not in principle in conflict with each other but it is a reality of the technology available to us. Interview respondents suggested that edition users would prefer not to be tied to an internet connection but they want it to be presented in an environment that they understand (the web). Most users at present think of digital editions as existing solely as websites (excepting the CD-ROM era), so they have less experience of how they might work outside of that model. Most of the interview respondents suggested

[12] A study by ComScore in the UK has shown that tablets are the most popular devices after daytime work hours peaking between 8 and 9 pm, while PCs dominate daytime traffic, <http://www.comscore.com/Insights/Data-Mine/An-Average-Monday-in-the-UK-PCs-for-Lunch-Tablets-for-Dinner>.
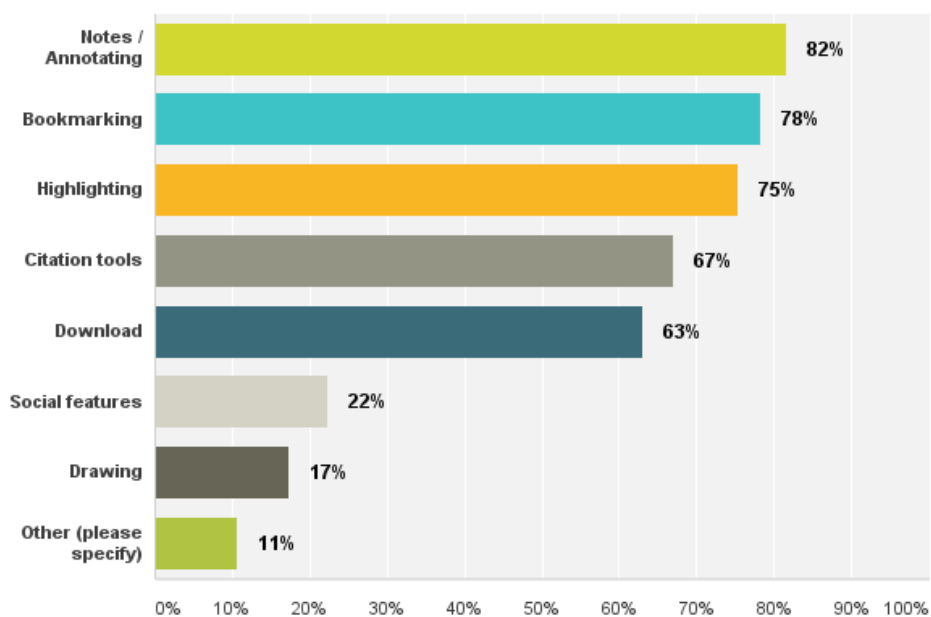
that editions should be presented in the form of a responsive website but with a stripped-down version of the edition in app form to be used mainly for reading, teaching or public engagement.

<u>Desired features of editions for tablets</u> *(Q34, Q35, Q37, Q38)*

The most desired functionality for a tablet-based edition was the ability to take notes and annotate. This result certainly adds weight to the idea that a tablet could be an excellent platform for a reader's edition. Social features scored quite low in this case, with only 22% selecting the option. This is perhaps a little disappointing, given the potential of tablets for collaborative work or for social editions, but perhaps it is a fair reflection of the current standing of that type of technology at present. In a later question 32% of the sample said they would not use any of the social features listed. Respondents also emphasised in their comments that stable URLs were an important feature for them for sharing and citation purposes. Among a list of dynamic features suggested to respondents the most popular was a dynamic image viewer for facsimiles. The majority of the sample liked this idea of dynamic tools such as interactive timelines and maps, perhaps due to their potential to contextualise materials in terms of space and time and provide alternative pathways into the content. Audio and Video features were only selected by 27% of respondents. These are features perhaps best suited to editions of texts for performances such as music and theatre.

Q35 **What types of functionalities do you wish you had in a digital edition on a tablet?**

Answered: 179   Skipped: 43

Notes / Annotating	82%
Bookmarking	78%
Highlighting	75%
Citation tools	67%
Download	63%
Social features	22%
Drawing	17%
Other (please specify)	11%

Conclusion

One of the most difficult challenges with creating the survey and interpreting its results is that the respondents use diverse types of digital editions. In the open text feedback provided at the end of the survey, a couple of respondents explained that they found it difficult to give an answer in some cases as they felt that the particular answer "depends on the edition". There can be no one-size-fits-all editorial guideline for this, but I believe there is enough data here to make some general recommendations. With the benefit of hindsight I regret restricting the study to tablet computers and not including smartphones and the diverse spectrum of devices that are somewhere in between. It was our feeling at the time that a smartphone was probably too small to be a realistic platform for a digital edition, but I now think otherwise. It is quite probable that many of the respondents did not make a black-and-white distinction between tablets and smartphones when considering their responses. Indeed, in the feedback section some of the respondents expressed that they were more interested in smartphones than tablets and some of them had even completed the survey itself on their smartphones.

Despite these challenges, the user study data clearly suggests that tablet computers can play a very useful role in the dissemination in a number of ways. The three main areas that I believe tablets can be beneficial this area are:

- Reading editions;
- Teaching & Learning applications;
- Engagement & Outreach.

The survey feedback and interviews strongly indicate that many users desire a better reading experience than what they typically encounter in an edition presented in a web browser. A tablet could offer an environment more suited to close reading and extended reading by offering a more distraction-free experience. The survey indicates that users would like such an edition to have integrated functionalities for taking notes, highlighting, bookmarking and citation. The format for such reading editions would need to be decided on a case-by-case basis depending on the audience. However, it is clear that there is a demand for both editions to be presented with rich interactive features, but also a simultaneous demand for a stripped-down version in a simple format such as a basic ePub that can be used offline.

Given that 74% of respondents had used tablets for some form of learning, combined with the fact that 72% of second and third level teachers use editions in their teaching, it is evident that tablets can provide some interesting possibilities in that area. Specific exercises for particular learning outcomes could be designed as apps by repurposing materials from the full edition. Performing a user experience study or investigation of the more popular learning apps would be a valuable contribution to design in this area.

As Alyssa Arbuckle[13] has argued, tablets can provide an excellent platform for the public digital edition, this being an edition that is aimed at a general rather than specialist audience. Creating such public editions, learning apps or games could help disseminate valuable knowledge beyond the walls of the academy in an enjoyable but also meaningful way. It could provide a form of exposure that would make the digital scholarly edition project more discoverable and also offer alternative pathways into the texts and materials.

[13] Arbuckle, Alyssa. Considering *The waste land* for iPad and Weird Fiction as models for the public digital edition. Digital Studies, 2014. <http://www.digitalstudies.org/ojs/index.php/digital_studies/article/view/264/329>.

These suggested forms of publication are all things that can be derived from a browser-based digital edition aimed at scholars; this is not a recommendation for an alternative type of scholarly edition but rather a diversification of the channels by which its content can reach users with varying needs and requirements. The user study has also clearly shown that users would like to see more responsive design approaches to building digital editions on the web so that they function better across devices. The typical convention in responsive design is to take a mobile-first approach and then expand as interface size increases. It is important to consider that some technologies that work on a desktop will not work in tablets and mobiles such as Flash, which is used by several image viewers for facsimiles in digital editions. Perhaps it would be valuable to build responsive digital scholarly editions for the browser and then also make that website a hub from which all the other formats like apps and reading editions can be downloaded. This is in a somewhat similar way to how Peter Shillingsburg envisions his knowledge site where a

> […] heterogeneous readership wanting a variety of different things which can be accessed from a single but complex knowledge site providing access to a range of specific texts of a work and the tools to use them variously.[14]

[14] SHILLINGSBURG, P. L. *From Gutenberg to Google*: electronic representations of literary texts. Cambridge: Cambridge UP, 2006, p. 100.

Producing digital scholarly editions that exist as tablet applications exclusively would not be very effective, as it creates a significant limitation for access. But if developing a native app as one of the additional modes for dissemination of an edition then it is important to give careful consideration to the choice of operating system. In an ideal world you would like to build applications that work on all major operating systems, but the extra resources required to achieve that may be out of scope. If choosing to build for just one OS and wanting to reach the largest audience possible, then it would almost certainly be best to build in iOS. However, there are two very significant drawbacks to committing to building solely within the Apple environment. Firstly, iPads, although abundant, are expensive and therefore beyond the reach of a large percentage of potential users. By ring-fencing academic output within such an environment you are potentially augmenting society's digital divide. Android dominates the developing world markets almost entirely, mainly because it is not tied to a specific piece of hardware so it can be used on low-cost devices. The second issue with developing for iOS is that Apple has control over what is or is not accepted for release on the AppStore. Independent downloads of apps are possible only on "jailbroken" iPads, which puts this channel outside of the reach of the average user.

The survey sample did not express a great deal of interest towards social features for tablet-based digital editions. However, industry statistics show that social media is second only to gaming in terms of time spent per app category,[15] and we have seen already that tablet usage peaks during leisure periods. So there is probably good potential for using tablets as a social reading platform such as what they have developed at *Digital Thoreau* using social tools CommentPress and Commons in a Box. If online collaborative reading communities are truly beginning to flourish as David Dowling (2014) suggests, then perhaps the usage of tablets

[15] <http://www.smartinsights.com/mobile-marketing/mobile-marketing-analytics/mobile-marketing-statistics/>.

for social editions is also a potential area for consideration. If social reading proved to be successful on the device, then it could also be utilized as a platform for creating social editions. Ray Siemens *et al* in a paper on social editing state that "with the facilitation of social media, there is a growing movement in humanities knowledge building communities to expand the scope of community membership beyond academics, and into the interested and engaged public".[16] Thus I believe that tablets as highly social platforms have the potential to play an important role at this intersection of an engaged public and the scholarly community.

The user study indicates that tablets can certainly play a valuable role in dissemination and also that users would like to be able to consume digital editions in more diverse forms. The editors need to decide which parameters and forms to present in their content, as editions cannot do all possible things at once, but ideally to make the decision in some sort of consultation or collaboration with the users. At the very least editors need to build with device multiplicity in mind and then consider the potential alternative uses of these technologies to bring content and value to their users.

[16] Siemens, R. et al. Toward modeling the social edition: an approach to understanding the electronic scholarly edition in the context of new and emerging social media. *Literary and Linguistic Computing,* 27 (4), 2012, p. 454. <http://llc.oxfordjournals.org/content/27/4/445>.

Data

The anonymised raw data of the survey is openly accessible on Google Docs at: <http://goo.gl/zgOrDw.>.

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